

FAVORITE TREES

By WILLIAM T. HORNADAY

Director, New York Zoölogical Park

THE
MENTOR
DEPARTMENT
OF SCIENCE

SERIAL No. 82



Norway Maple

MENTOR GRAVURES

SOLITARY WHITE PINE
WHITE OAK
WHITE ELM
CHESTNUT
CAROLINA POPLARS
RED MAPLES AND
SILVER MAPLES



I AM afraid of men who are so lacking in the divine sense of proportion that they are indifferent to trees and tree planting. Such men are on the off side of the boundary of civilization. It is only the most blasé tree lover who can write about our favorite shade trees without becoming insistently practical. The real tree planter leaps at once into a consideration of what is best and not best, and how streets and houses can best and most quickly be shaded. If there is anything in the realm of nature that rivals in human interest a healthy wild animal, it is a living tree.

In the matter of street shade trees, our American cities and towns are, with perhaps the exception of New England, miles behind cities and towns of Europe. By way of example, take Inverness in Scotland, and Hanover in Germany. Both of these cities are so immaculate, so beautifully shaded, that every American must sigh when he sees either of them. In all America I know of only one city that is comparable with either; and that is the capital of this nation, which for at least thirty years has had the benefit of a very active tree-planting commission.

Throughout the cities and towns of America, all save a very few, the vast majority of their street shade trees have been set out and cared for by a careless and disreputable old party named Hap Hazard. Old Hap is a personage of surpassing influence and varying moods, and his methods show the evil results of too much "personal liberty."

MAPLES—WHITE, SILVER, AND RED

What are the best trees for American streets? The maples. Some people think maples are common, and have tried to find and use something else "just as good"; but the real value of all just-as-good articles is too widely known to require comment. For all round shade purposes the tree planter can no more break away from the maples than a water department can get away from iron pipes.

The white or silver maple (*Acer saccharinum*) is the rapid grower, and where speed is a prime factor this species is planted. In five years after planting you have a real shade tree; but its top is spreading, its wood is soft, and its long, straggling main branches are snapped off by strong winds in a way that breaks your heart.



LEAVES AND FRUIT OF THE SILVER MAPLE

Standing on an open country roadside, with plenty of room to grow, this tree easily becomes the giant of all maples. It attains a height of 120 feet, a diameter of four or five feet, and a top spread over all of seventy feet or more. When planted close together in a street these—or any other maples—will of necessity lose their lower limbs by overcrowding. Then they send up bare trunks, and develop their tops seventy-five or more feet high in the air.

But alas! the silver maple is short lived, and it dies rather easily. It is very subject to attacks of wood borers and leaf scales.

The red maple (*Acer rubrum*) is often called the "soft maple"; but its wood is harder than that of the preceding species. Its top is more com-

pact, its branches less liable to mutilation by the winds, and it grows rapidly. On the whole the red maple is a mighty good tree, and for the home grounds I think it has no superior in the maple group. It is extensively used as a street tree. With plenty of room, this maple also becomes a giant, 100 feet high.

Millions of maples, white and red, now protect and adorn the streets of American cities and towns. In the older towns of Connecticut it is no uncommon thing to find them 100 feet in height, their huge trunks and long, naked branches towering upward until their tops meet far aloft and overarch the street. Where they stand only thirty or forty feet apart they develop in such erect and lofty form that they seem totally different from the isolated specimen trees of the fields and country roads where

F A V O R I T E T R E E S

they expand naturally. If you wish to find three maple trees that are unbelievable giants in size, look for them on the Ridge Road, between Ridgefield (Connecticut) and Danbury. Once we lunched, in admiration and awe, in the shade of a giant that for a maple seemed beyond the bounds of belief. I should say that the trunk of our luncheon tree was all of five feet in diameter, fifteen feet in circumference, that the tree was at least 100 feet high, and had an extreme spread of eighty feet.

The very best street shade tree for our northern cities and towns is not an American species, but a blooming foreigner; and its name is the Norway maple (*Acer platanoides*). This is a slow grower; but its wood is hard, it is fitted to endure the slings and arrows of municipal existence, it lives long, it does not grow embarrassingly tall, and it seems to be specially fitted to repel the attacks of insects and tree diseases. With a modicum of intelligence on the part of those who care for it, its head can be trimmed into a low, compact growth. Trees of this species should be set from thirty-five to forty feet apart, according to conditions. For street purposes, to give good shade



LEAVES AND FRUIT OF THE
NORWAY MAPLE

and look beautiful, the Norway maple may fairly be regarded as Nature's best gift to the urbanites of our land. The amount of drought that it can endure in a city street, and yet live, is almost beyond belief. Rarely do any insects make a real impression upon it, except the gipsy and brown-tail moths.



AN AVENUE OF NORWAY MAPLES

Trees, six years after planting, in one of the streets of Newark,
New Jersey

THE WHITE ELM

Ever since the settlement of America the white elm (*Ulmus Americana*) has excited admiration and affection. And how could it be otherwise with a tree that is at once a giant in size and an arboreal bouquet in beauty? Who is there that can behold unmoved the magnificent uplift of a giant elm, crowned



LEAVES AND FRUIT OF THE WHITE ELM

by a colossal overhang of gracefully drooping branches? Where else in trees will such curves be found? No wonder the elms of New Haven are famous, or that their passing away is a heartbreaking loss! The students of Union College, at Schenectady, have done well in putting forth their best efforts and several chains, quite regardless of cost, to save their eighty-year-old elm that until recently threatened to split asunder.

The elms inhabit the United States everywhere eastward of the great plains, and of species we have about eighteen. The white elm is the giant of the group. Often it attains a height of from 100 to 120 feet and its trunk a diameter reaching a maximum of ten feet. An elm of this species, growing in the open, and quite untrammelled, is in its archi-

tecture the most graceful and beautiful of all shade trees known to me.

It is a painful task to set forth the cold truth regarding the elms as shade trees for this insect-ridden earth. When the birds were here in great force the elms were secure; but the destruction of the insect eating birds, and the deadly increase of tree-destroying insects, have placed the elms at enormous disadvantage.

Today the maintenance of an elm involves a constant battle with insects; and therefore the usefulness of that tree is painfully reduced. Its foliage is the chosen feeding ground of the elm-leaf beetle; and one miserable wood leopard moth in its larval state can completely kill a fine young elm tree.

CAROLINA POPLAR

The Carolina poplar (*Populus deltoides*) is despised by some landscape architects; but for all that it is a tree of value. The poplars and cottonwoods inhabit the whole eastern two-thirds of the United States and southern Canada, from the Continental Divide to the Atlantic.



A GIANT WHITE ELM

F A V O R I T E T R E E S

As a shade tree the Carolina poplar is in many cities mighty poorly understood. Unless it is intelligently pruned and educated in its growth, this tree is not a successful street shade tree. Left to itself, it grows too tall and open, and if improperly pruned it is utterly spoiled. In a mean street it can live and grow "whence all but it have fled;" and this thirst-proof quality—in America, where tree watering is so rarely done—renders this tree decidedly valuable.

The standard and stereotyped method of the untrained street-tree pruner is to amputate all the large limbs of a poplar a few feet from the trunk—like cutting off a man's limbs at elbow and knee. This is called "pollarding," and any tree so treated, poplar or willow, is outrageously misused. The stub end of each amputation



COTTONWOOD



COTTONWOOD

An old tree at Geneva, New York, long famous locally as "The Century Tree"

sends out a thick bunch of small, straight switches, like a living broom of brush, than which nothing could be more unnatural or more ugly in tree formation.

The proper way to prune a Carolina poplar is to begin when the tree is young, go over the outside of it with a pole pruner, and annually cut off one-half of each twig that thrusts itself out to the

surface. It is like shingling hair. In this manner a compact, wind-proof top is secured, and the tree does not look butchered.

The foliage of the poplar comes out rather late, and drops rather early; which is a disadvantage. This, however, is offset by a phenomenal rapidity of growth, in which this tree surpasses all others. If you ever wish to secure a big tree in a hurry, plant a Carolina poplar, and keep it well watered and mulched. In ten years a tree of this species easily attains a height of sixty feet, and a trunk diameter of twelve inches.

As a street tree the poplar is no longer popular, and in some cities and

towns the planting of it is forbidden. That is overdoing the matter. This rule obtains in the East, where there is a wide range of choice and many chances for errors. The objections to this tree as a street tree are: that a little bit of intelligence is necessary in the pruning of it; that its flowers and its cottony fruit are supposed to be horribly detrimental to the peace of mind of the citizen; and that the roots get into sewers

and drains in search of moisture. Even as an abused and neglected street shade tree, very often the Carolina poplar will live and grow where no other species can endure.

THE CHESTNUT

To speak of the American chestnut (*Castanea dentata*) is to write an obituary and a tribute to the departed. The



LEAVES AND ACORNS OF THE WHITE OAK

accursed chestnut blight has robbed us of the best beloved nut tree of the East, and one of the noblest forest trees of the whole Appalachian region.

In its architecture the chestnut much resembles the white oak. The trunk is massive, the bark is strongly ribbed, the main branches are enormous, and the top is a nobly rounded mass, spreading afar. A fully mature chestnut standing alone, with its crown 100 feet in the air, and its branches spreading from seventy to eighty feet, is a grand object. When the tree is in bloom the whole outer surface of the top takes on a feathery and pale yellow appearance. The oblong lanceolate leaf, with each rib terminating in a spine, is so strongly characteristic as to be instantly recognizable.

The deadly "chestnut blight" is a fungus disease that seems to be absolutely unkillable. The name of the fungus is *Diaporthe parasitica*, and it propagates by spores that float through the air and attach themselves to the bottom of any cavity or wound on any branch or small trunk



A PIN OAK

in which they can find lodgment. Once securely established on a limb, the fungus grows and spreads. Finally it completely encircles the limb, and presto! overnight the leaves of that limb turn light brown, as if scorched, and in three days it is quite dead. Other branches follow in rapid succession. There is no help for the tree.

The chestnut scourge of New England came originally from Japan. It was first discovered in the New England Zoölogical Park, where energetic efforts were expended in fighting it, and in endeavoring to find a way to stop its ravages. But all this work was in vain. Later on the Pennsylvania legislature voted \$200,000 for a Chestnut Blight Commission. After working for nearly two years, and finding no way to check or to stop the spread of the fungus through the



TULIP TREE

The tulip, or tulip poplar, is a fine tree for parks

the forests of Pennsylvania, the commission gave up the fight.

Over a wide area, extending in every direction around New York, and rapidly increasing, the chestnut trees are dead.

The further spread of the fungus is in the hands of Nature. The spores float through the air for long distances, and no man can stop them or detect them. Our only hope for an end of the curse lies in the possibility that some sudden and violent change in climatic conditions may exterminate the fungus.

THE STURDY OAK

Despite the devastating ax and portable sawmill, the eastern half of the United States is even yet richly blessed in oaks; but few American people actually know the tree. Even in autumn, when all the leaves of a



SWEET GUM TREE

A beautiful tree for parks. Its leaves are star-shaped

forest monarch turn from dark green to the richest copper bronze, and we are compelled to pause and admire it, the most of us can only say with oxlike wisdom, "It is an oak!" Will the time ever come when even the "intelligent" American, man or boy or girl, can say, "This is a white oak; that is a red oak; and yonder is a pinoak"?

With oak lumber at \$80 a thousand (it once was only \$10), we cannot reasonably expect any giant white oak (*Quercus alba*) long to survive, except on ornamental grounds. Today the student of trees will do well to look for fine specimen oaks on the country estates of the rich, who have been able to keep the wolf from the door while protecting their primeval forests from the all devouring ax and saw.

The forested grounds of the New York Zoölogical Park, carefully preserved by David and Philip Lydig through eighty years of vandalism, contain many fine old specimens of white and red oaks; but unfortunately none of them stand sufficiently alone that they can be photographed as specimen trees. To the people of New York City each of those forest giants is worth at least 1,000 times more than it ever would have brought in the lumber market by board measure; and I—even I!—am the proud owner in my own right of four giant white oaks which are a source of joy to many persons.

The white oak takes its name from the color of its bark, which, as the adult tree stands, is the lightest of all oaks. The maximum height of this



LEAVES AND FRUIT OF THE WHITE PINE



THE LAST OUTPOSTS OF THE EASTERN FORESTS
Storm-beaten Cottonwoods standing sentinel in Montana

tree is about 150 feet, and its architecture is marked by enormous naked branches that have a horizontal tendency. Trees four feet in diameter are common enough, where the ax has spared them. The wood of the white oak is the finest of all oak lumber; but now it is scarce and dear. The best white oak is as costly as average mahogany. We have always been recklessly prodigal in the use of oak, employing it in solid masses instead of in veneering.

F A V O R I T E T R E E S

The question of oaks as street shade trees constantly recurs. It is quite true that when the red oak (*Quercus rubra*) is young it is a very successful street tree; and the same may be said—with a little less enthusiasm—of the pin oak, which, from fifteen to thirty years of age, is beautiful and satisfactory. But what will be the result when those oaks of lofty habit become forty or fifty years old, and more? When they are seventy their lofty branches of great size will be a constant menace to those who walk and work and play beneath them; and the cost of cutting out and lowering the dangerous limbs will be quite serious. A heavy oak limb spells d-e-a-t-h to any one upon whom it falls—and this we chance to know only too well.

My best advice to shade-tree commissions is to go slow in planting tall-growing oaks in city streets. For my own part I do not think it is wise. The proper place for municipal oaks is in city parks or on boulevards.

As an oak for fall color the scarlet oak (*Quercus coccinea*) is the oak unrivaled. Under favorable autumn conditions its leaves take on rich, wine-colored reds that set the forest ablaze, and the leaves of this tree persist long after most other oaks have made their winter arrangements. This tree can usually be recognized by the wonderfully elaborate scalloping and in-cutting of its leaves, and their great number of spearlike points.

THE WHITE PINE

Were it not for the danger of being taken too literally, we should say that the white pine (*Pinus Strobus*) is commercially almost a tree of the past. Let him who doubts this proposition go to the nearest



HEMLOCK



A TALL, FOREST-GROWN
WHITE PINE

F A V O R I T E T R E E S

lumber yard, look at the pitifully small exhibit of white pine lumber, then ask its price. Clear white pine now costs \$100 a thousand—which is more than the average cost of mahogany!

Originally this tree was found in the region surrounding the great lakes, the Appalachian country, New England, Ontario, and Quebec. To-day a standing forest of white pine is to be found only on the last frontier. Throughout New England and the Middle States only an occasional specimen tree can be found, usually near a house, and the product of some tree lover's thoughtful industry. Great efforts are being made by the state of New York, and by land-poor private individuals, to plant new pine forests on denuded lands. The effort is most commendable; and it is high time that



WORK OF HICKORY BARK BORERS



BORINGS OF THE HICKORY BARK BORERS

the denuded pine lands of Virginia, the Carolinas, Georgia, and other southern states were similarly replanted with southern pines of commercial value.

Every man with an acre of ground in the white pine region should plant at least one white pine for each acre of his holding. To me this tree has the most beautiful system of foliage to be found on any of our large conifers. Each branch reaches out horizontally, with a thick feathering of densely green needles for its terminus, and you can recognize this species anywhere by the strange *flat and level* form of each branch. But this refers mostly to the specimen tree, standing alone and unrepressed. The trees of a regulation white pine forest have a totally different look.

F A V O R I T E T R E E S

They are very tall, their trunks are naked far up, and their branches are small and "few in a hill." Individually the forest pines are not particularly impressive; but in the open the eye searches out every long-limbed specimen tree, and like a tired bird gratefully dwells upon it.

The hemlock is commercially the poorest and cheapest of our large northeastern conifers, and that fact has saved many a clump from destruction. Of all mean lumber—to warp and twist and splinter and split—hemlock is the constitutional limit. The right place for a hemlock is in your forest, or around your bungalow, alive and upright. Take it to your bosom as a living tree, and it may surprise you.



A TYPICAL YOUNG BEECH

For that matter, take all the home trees to your heart as living things. Love and respect them as neighbors, and cultivate them as fellow citizens. They are worth while.

SUPPLEMENTARY READING

OUR NATIVE TREES

\$2.50

By *Harriet L. Keeler*

How to identify them. With one hundred and seventy-eight full-page illustrations.

NORTH AMERICAN TREES

\$7.00

By *N. L. Britton*

PENNSYLVANIA TREES

By *Prof. J. S. Illick, Penna. State Forestry Academy*

A practical work on the planting and cultivation of trees. Fully illustrated.

THE TREE BOOK

\$4.00

By *Julia E. Rogers*

An attractive illustrated work.

THE TREE GUIDE

By *Julia Ellen Rogers, author of "The Tree Book"*

HANDBOOK OF TREES OF NORTH AMERICA

\$6.00

By *Romeyn B. Hough*

An illustrated work by a distinguished authority.

TREES OF NORTHERN UNITED STATES

\$1.00

By *A. C. Aggor*

A brief, yet comprehensive treatment of the subject.

SHADE TREES IN TOWNS AND CITIES

\$3.00

By *William Solotaroff*

TREES, SHRUBS AND VINES OF THE NORTHEASTERN UNITED STATES

\$1.50

By *H. E. Parkhurst*

A general account of all the trees, shrubs and vines native to this part of the United States.



Dr. Hornaday certainly has it in for old Hap Hazard. "Old Hap," he says, "is erratic, neglectful, lazy, or ignorant." I asked Dr. Hornaday to give me something definite about shade tree work in this country. He came back eagerly and with emphasis. "In view of the fact," he writes, "that millions of dollars now are being invested in street shade trees in American cities and towns, it seems mighty important to consider the wisest ways and means. The foundation principles of the business are plain and simple—and briefly as follows:



WHITE ELM

"Treat the streets of every city, town, and village on a broad, far-reaching plan founded on experience and exact knowledge, and forever cut out the system which permits every lot owner to do as he pleases about planting and watering.

"Plant every street as one contract, to secure uniformity.

"Do not think that it is sufficient to bury the roots of a tree in the earth and put a guard around it. It is vitally necessary to water each tree during the first years of its life, to enrich its soil and to protect its root area from baking in hot weather.

"Learn how to prune trees with intelligence. Brute strength and a saw are not the whole thing."

* * *

"Every city, town, and village should have a shade tree commission to rule with a free hand, a rod of iron, and a fair amount of money. It is according to its shade trees that a town is attractive or repulsive. Thousands of American towns and villages are neglectful of our friend the Tree. A trip through England, France, or Germany, followed immediately by a trip of the same length in America, is enough to make a sensitive American tree lover ill with envy."

"Do you want to see some towns that are a joy to the eye and a source of pride to the American? Then look at Stockbridge, Mass., and like New England towns; Carmel, N. Y.; Irvington at Indianapolis; Newark and the Oranges, N. J.; Washington, D. C.; Manhattan, Kan.; Pass Christian, Miss.; and Riverside, Cal. There are others, but not half enough of them."

★ ★ ★

Now let us have some actual figures, Dr. Hornaday. You mention Newark, N. J. What about the work of its tree commission? "The city of Newark has a very intel-

ligent and effective tree commission," is the doctor's reply. "The shade trees number on the streets of Newark now 62,974, and they are *watered* and *tended*, as if someone cared whether they live or die! During ten years that commission has planted 24,440 trees, and the trees rank as follows: Norway maples, 11,615 (nearly one-half!); oriental planes, 4,891; elms, 3,605; oaks, 1,798; sugar maples, 719; poplars, 693; Bolleana poplars, 665; lindens, 392; pin oaks, 217; Ginkgoes (or maidenhair tree), 198; red oaks, 177; horse chestnuts, 160. The commission states that it was a mistake to plant so many elms.

"You can see from these figures that I have made a study of tree culture. It is a subject very near my heart. I wish I could make everybody enthusiastic over it. A fine, flourishing tree is of more service and is more of an ornament in a community than some human beings—and it lasts longer.

"What shall it be, then?" exclaims Dr. Hornaday. "A model shade tree commission for you in your town, or old Hap Hazard?"

W.D. Moffat



RED MAPLES AND SILVER MAPLES



RED MAPLES and SILVER MAPLES, frequently used to beautify city streets, are the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

RED MAPLE (*Acer rubrum*) and WHITE MAPLE (*Acer saccharinum*)

Monograph Number One in The Mentor Reading Course

IT is early autumn. The first frosts have nipped the foliage, and everywhere there is a riot of color. The maples are gorgeous in their new fall dress,—yellow, orange, crimson, and scarlet. Who has not seen and admired it all? Under favorable climatic conditions city dwellers find just as gorgeous and soul-stirring colored-foliage effects in their parks and streets as outdoor men find on lake margins in the Adirondacks. It is in our northern September and October glories and riots of color that we pity the people who live in the monochrome-green Tropics.

Of all trees planted along the streets of cities in the northeastern part of the United States, maples number more than nine-tenths. The reasons for this are not hard to find. The maples are the most beautiful, the cleanest, and the healthiest of all street trees. Their architecture is well adapted to the requirements of street and sidewalk; they are tall enough, not too broad; and they are in leaf early and late; they grow rapidly; and, last but not least, their

thick foliage not only shades the street, but also, with its beautiful blending of soft tones and its endless alternation of light and shade, adds beauty to the surroundings.

The red maple, also called the swamp or soft maple, is lavish in its display of gorgeous coloring. In early spring it blossoms out with a wealth of crimson flowers. When these fade the leafstems take their color, and later this spreads over the twin-winged seeds, and at last the foliage bursts forth into the glorious red of an October conflagration.

The leaves of the white maple (which is sometimes called the silver-leaf maple), on the other hand, turn pale yellow in the fall. Its flower is of a yellowish green hue, rather inconspicuous, and it blossoms before the leaves.

It is interesting to note that the seeds of the maple are furnished with two wings about an inch long, a form well fitted to be whirled off by the autumn winds in order that other maples may spring up.

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION

ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 3, SERIAL No. 82

COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.



WHITE ELM



THE WHITE ELM, a tree that serves a great ornamental purpose, is the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

WHITE ELM (*Ulmus Americana*)

Monograph Number Two in The Mentor Reading Course.

THE old tree that stood on Boston Common and was destroyed by a great storm on February 15, 1876, was a beautiful representative of the American white elm. This tree measured 22 feet in circumference, and was supposed to have been in existence before the settlement of Boston.

Elms grow all over the north temperate zone except in the western part of North America. The branches of this tree are thick and spread widely. The bark is rather rough. In the young tree the wood is at first a brownish white color; but as the tree grows older this changes to a brown having a greenish shade. This wood has a close grain, and is free from knots. When it contains a fair amount of moisture it is exceedingly tough, and until the supply of water elms became exhausted it annually supplied millions of barrel hoops. Elm wood is strong and will not crack

unduly when once seasoned; but it will not take a polish, and on exposure to the weather it decays rapidly.

Because of its toughness elm wood is used for the keels of ships, and for the blocks of the rigging. It is also used in the manufacture of furniture. In old times, before cast iron pipes were manufactured, elm wood was used for water pipes.

The elm also serves a great purpose in its use as an ornamental tree. It was used first in France as far back as the reign of Francis I for the adornment of public walks. Poets have often referred to the custom of training vines on the trunk of the elm. This is still done in Italy.

The white elm tree is shaped in the form of a vase, with a broad, drooping top and slender stem. Its leaves are pointed at the end and are rather rough on the surface. The fruit of the elm is round, with hairy edges, and appears in April and May.

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION
ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 6, SERIAL No. 82
COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.

CAROLINA POPLARS





AROLINA POPLARS, picturesque and interesting members of the tree family, are the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

POPLAR (*Populus*)

Monograph Number Three in The Mentor Reading Course

THE most distinguishing trait of the poplar family is the tall and towering form of its species. The Lombardy poplar carries this columnar effect to the extreme, and it is this tree that furnishes a national feature to the landscapes of France. To a more reduced extent we find the towering feature in the cottonwood, and aspen also. The bark too is a good sign of a poplar, and the smooth, fleshy, and rather leathery leaf. On our northern streets the poplars are about the first trees to drop their leaves in autumn—far more promptly than seems at all necessary.

Poplar trees bear catkins; that is, small, scaly spikes. They inhabit the north temperate zone almost entirely. They are partial to moist ground, and often persistently line the riversides where other trees have given up. All these trees have soft, easily worked timber, which is very perishable when exposed to the weather, however. Many of the species are used for paper making. In the Far West, where pioneers are often forced to build cabins of cottonwood logs, the owner occasionally finds to his dismay that his new home is infested with bugs of the unpleasant kind that "have no wings at all, but ——." And sometimes (though not always) it is found that the bugs have come from the cottonwood logs.

The most picturesque of the poplar family is the white poplar or silver-leaf.

It is a broad, dignified, and graceful tree. In the early budding period the dark and deeply furrowed bark of the lower trunk gradually merges into the mottled white of the top of the tree. Its foliage is just as beautiful, with its small and finely shaped leaf that is rich green above and silky white beneath.

The Lombardy poplar is remarkable for its tall, chimney-like shape, absolutely unique in trees. It is thought to have grown first in Persia; but it received its popular name from its abundance along the banks of the rivers of Lombardy. It is chiefly valuable as an ornamental tree, as its wood is of very inferior quality. The landscape gardener uses it as a relief to the rounded forms of other trees. In Lombardy and France they form tall hedges of this poplar for shade; although as a shade tree, due to its slender form, it seems worthless.

The cottonwood or river poplar ranges from West New England to the Great Plains and southward. It is a stately tree, and, as one can see from its name, it endeavors to grow near water. It has triangular leaves which quiver at the least breath of air. The tree often grows to 100 feet in height. Cottonwood timber used to be very valuable to the pioneers on the prairies, where it was frequently the only available wood.

There are many other varieties of poplar; but these are the most familiar.

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION
ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 6, SERIAL No. 52
COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.



CHESTNUT



HE CHESTNUT, one of the few trees that may truthfully be called lordly, is the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

CHESTNUT (*Nux castanea*)

Monograph Number Four in The Mentor Reading Course

BESIDES the well known and much beloved American chestnut, there is one other kind of chestnut tree worthy of mention,—the horse chestnut, originally a native of the northern part of ancient Greece. Later it was transplanted to other countries. The tree grows rapidly, and sometimes attains a height of over fifty feet. A huge chestnut tree with a clear space to grow in shows a sort of brutal grandeur that is without rival in all forest-land. It is not graceful, its burs repel familiarity, and its fruit is a ghastly practical joke. One cannot love a grim old horse chestnut tree any more than a horseman can love a sawhorse; but at the same time one can admire it as a shade-giver.

It is in June that this tree is at its best. As one writer says, "A cloud of misty white envelops it,—it is majestically in bloom, and for miles around it is the towering center of attraction. Its millions of tiny blossoms conspire to produce one of the most stupendous floral displays of nature. How graceful those slender, cream-white catkins hang by thousands from every point of attachment—it is a feat of forestry!" There is no one who can fail to be impressed by the glory of the magnificent floral display of this chestnut in a satisfactory June.

The boughs of the horse chestnut are strong and spreading; the leaves are long and wedge-shaped. The blossoms, which appear in May, are white, with a dash of yellow. The nuts are ripe about the first week in October, when they fall to the ground after being nipped by the frost. Despite the litter of its burs and its useless and poisonous "nuts," the chestnut tree is much used for ornamental and shade purposes.

The wood of the horse chestnut is soft and is not much used in carpentry work. The nuts have been used sometimes in the making of an oil for burning, and in the manufacture of starch.

The Spanish or sweet chestnut, now known as the American chestnut, is likewise a stately and magnificent tree. It lives to a great age, and sometimes becomes very large. Its flowers, which appear in early summer, are slender, whitish-yellow catkins. The nuts of this tree have a sweet taste when raw, and are difficult to digest; but when they are cooked they are a very nourishing food, and are important factors in the food supply of the poor in Spain, Italy, Switzerland, and Germany.

The largest sweet chestnut tree known is the famous "Chestnut of a Hundred Horses" that grows on the slopes of Mount Etna. This tree has a circumference of over 190 feet.

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION

ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 6, SERIAL No. 82

COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.



WHITE OAK



THE WHITE OAK, a variety of tree long famous for sturdy, rugged strength, is the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

WHITE OAK (*Quercus alba*)

Monograph Number Five in The Mentor Reading Course

FOR hundreds of years the oak has been used as a symbol for strength, and has stood for sturdy vigor. It is the monarch of the forest, and it dominates no less the lawn and the park. It is unconquerable. "The acorn," says Robert Douglas, "is the only seed I can think of which is left by Nature to take care of itself. It matures without protection, falls heavily and helplessly to the ground to be beaten and trodden on by animals; yet the few which escape and those which are trodden under are well able to compete in the race for life. While the elm and maple seeds are drying up on the surface, hickories and walnuts waiting to be cracked, the acorn is at work with its coat off. . . . Fires may run over the land, destroy almost everything else: the oak will be killed to the ground; but it will throw up a new shoot the next spring."

The lower limbs of the white oak stretch far out parallel with the ground and not far above it. Its top has a splendid, dome-like shape. The leaves are oval, and have regular and deeply indented edges. They are bright green above,

but whitish beneath. In autumn they turn to a purple or violet tint. The bark of the oak is ashy white and rough.

The egg-shaped acorns are placed either singly or two together on short stalks. Usually they are not very abundant.

The wood of the white oak is not so hard as that of the British oak; though it is good, tough material. The heartwood is of a rather light reddish brown color.

Few persons, we venture to say, realize the extent or the great value of the services of the gray squirrel as a tree-planter. Heedless eyes see the little gray sprite choose an acorn, pick out a spot for its interment, then dig a hole in the earth, plant the seed, pat down the earth, and hurry away to other engagements. It is interesting, of course; but how many stop each time to remember that millions of giant oaks owe their existence to the keen little brains and deft paws of squirrels that carefully buried them out of the reach of bad weather and decay, and gave them their start in life?

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION

ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 6, SERIAL No. 82

COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.



SOLITARY WHITE PINE



HE SOLITARY WHITE PINE, almost kingly in its imposing stature, is the subject of one of the intaglio-gravure pictures illustrating "Favorite Trees."

WHITE PINE (*Pinus Strobus*)

Monograph Number Six in The Mentor Reading Course

THERE is but one tree—the white pine!" So exclaimed a man who viewed one of these magnificent forest giants. The white pine is a kingly figure. It is the most majestic and imposing of all eastern trees, with its broad sweep of huge, horizontal, shelving branches and its towering central shaft, like a penstock rising through a green torrent.

In North America there are many kinds of pine. Usually we think of them for their practical value as furnishing tar, pitch, and turpentine, or lumber for various uses. So important were these magnificent white pines to early New England that Maine to this day is called the "Pine Tree State."

It is where the white pine grows in an open space that it reaches its fullest development. In forest it grows tall and straight, and its lower limbs die for lack of sunshine. Some trees reach the height of 200 feet. It was these giants that were sought as masts for sailing vessels in earlier times.

Pines are distinguished from other cone-bearing trees by the clustering of their needles in groups of two, three, or five; but the white pine may be distinguished from all other members of the species because it is the only American tree that has its needles grouped in fives.

The cones are long and slightly curved. They have thin, smooth scales which are a little thickened at the apex. They are five or six inches long, one and a half to two inches thick, and ripen in autumn of the second year. The scales of the cone protect the seeds from the attacks of animals and birds; but they are not proof against the red squirrel nor crossbills. These birds have bills with crossed mandibles. They look very queer; but at the same time they are exactly suited for tearing apart the pine cones to reach the seeds within.

The white pine has always been regarded rather indifferently as an ornament, notwithstanding its imposing appearance; but for a century the discerning ones have planted it around their homes for its matchless stateliness. Always, however, it has been much sought by the lumberer. Due to this, most of the old trees have long disappeared, and of all the great examples that formerly could be found in Maine and Vermont few now exist. However, this tree is now being extensively replanted here and there, and is found to thrive in light, sandy soil.

In England the white pine is called the Weymouth pine. The tree also grows in northern Germany.

PREPARED BY THE EDITORIAL STAFF OF THE MENTOR ASSOCIATION

ILLUSTRATION FOR THE MENTOR, VOL. 3, No. 6, SERIAL No. 82

COPYRIGHT, 1915, BY THE MENTOR ASSOCIATION, INC.